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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/811,703

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Pramode Kandpal

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CORVIS CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
7015 ALBERT EINSTEIN DRIVE
COLUMBIA, MD 210469400

EXAMINER

SINGH, DALZID E

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/811,703

Applicant(s)

KANDPAL ET AL.

Examiner

Dalzid Singh

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 30-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 30-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/22/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because the structural elements of figure 1 (12, 14, 24 and 26), figure 2 (16 and 20), figures 3a, 3b, 3c, 3d (30 and 32), figure 3e (24, 30 and 32), figure 4a (26, 40, 42, 44₁, 44₂ and 46), figure 4c (26, 40, 42, 44₂ and 46), figure 4d (26, 40, 42, 44₁ and 46), figure 4e (40, 42, 44₁, 44₂, 48, 50, 52, and 46), figure 4f (40, 42, 44₁, 44₂, 46, 50 and 52), figure 4g (26, 40, 42, 44₁, 44₂, and 58), figure 4h (26, 40, 42, 44, 46, 60 and 62), figure 4i (26, 40, 42/44 and 64) and figure 4j (40, 42 and 44) are merely labeled with identifying numbers. Since these elements are illustrated as blank boxes which do not correspond to a well known graphical representations, applicant is required to provide suitable legends under 37 C.F.R. 1.83 (a) and 1.84 (p). Correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 30-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 1 recites the limitation "the at least one signal wavelength" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1, 30-38 and 40-48 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8, 10, 17-20 and 25-27 of U.S. Patent No. 6,714,739 (hereinafter "patent 739") in view of Taga et al (US Patent No. 5,559,910).

Regarding claim 1, patent 739 discloses optical transmission system (see claim 1 of patent 739) comprising:

optical transmitter configured to transmit one signal wavelengths and a tuning wavelength;

an optical receivers including an optical filter having a filter bandwidth including at least one signal wavelength and a percentage of the tuning wavelength, and an optical to electrical signal converter configured to receive the at least one signal wavelength from said filter;

a first tuning optical to electrical converter configured to receive a first portion of the tuning wavelength reflected by said filter (it would have been obvious that since the filter is a grating filter, therefore the wavelength that is not passed or stopped will be reflected by the filter);

a second tuning optical to electrical converter configured to receive a second portion of the tuning wavelength passed by said filter; and,

a filter controller configured to tune the filter bandwidth based on the relative proportion of first and second portions of the tuning wavelength provided to the first and second tuning optical to electrical converters.

Patent 739 differs from the claimed invention in that patent 739 does not disclose the use of plurality of optical transmitters to transmit plurality of different wavelengths and plurality of optical receivers. However, providing plurality of transmitters and receivers is well known. Taga et al is cited to show such well known concept. In Fig. 1, Taga et al show plurality of optical transmitters (2a, 2b, 2c and 2d) for transmitting

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plurality of different wavelengths (ch 1, ch2, ch3 and ch4) and plurality of optical receivers (9a, 9b, 9c and 9d) for receiving the transmitted signals. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmission system of patent 739 to include plurality of optical transmitters and optical receivers since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8, 11 (7th Cir. 1977). One of ordinary skill in the art would have been motivated to do such in order to increase transmission bandwidth by transmitting plurality of wavelengths channels. Furthermore, in the preamble, applicant recites wavelength division multiplexed optical transmission system. As shown in Fig. 1 of Taga et al, plurality of channels (ch 1, ch2, ch3 and ch4) is multiplexed by wavelength-division multiplexer (3) to form wavelength division multiplexed optical transmission system.

Regarding claim 30, patent 739 discloses that said filter includes a Bragg grating configured to reflect the at least one signal wavelength and the first portion of the tuning wavelength and transmit the second portion of the tuning wavelength (see claim 2 of patent 739).

Regarding claim 31, patent 739 discloses that said Bragg grating is configured to reflect and transmit 50% of the tuning wavelength (see claim 3 of patent 739).

Regarding claim 32, patent 739 discloses that said filter includes a Bragg grating configured to transmit the at least one signal wavelength and the first portion of the

tuning wavelength and reflect the second portion of the tuning wavelength (see claim 4 of patent 739).

Regarding claim 33, patent 739 discloses that said filter controller includes a temperature controller configured to thermally tune said optical filter (see claim 5 of patent 739).

Regarding claim 34, patent 739 discloses that said filter controller includes a strain controller configured to tune the optical filter by varying at least one of compressive strain and tensile strain applied to said filter (see claim 6 of patent 739).

Regarding claim 35, patent 739 discloses that said transmitter includes an optical source providing optical energy at a carrier wavelength, and said transmitter is configured to transmit one signal wavelength at the carrier wavelength and the tuning wavelength on a subcarrier wavelength of the optical source (see claim 7 of patent 739).

Regarding claim 36, patent 739 discloses that said transmitter includes an optical source providing optical energy at a carrier wavelength and said transmitter is configured to transmit at least one signal wavelength on a subcarrier wavelength of the carrier wavelength and the tuning wavelength on the carrier wavelength (see claim 8 of patent 739).

Regarding claim 37, patent 739 discloses that said filter has a filter bandwidth including a plurality of signal wavelengths; said signal converter is configured to down-convert the plurality of signal wavelengths to a corresponding plurality of electrical signal frequencies (see claim 10 of patent 739).

Regarding claim 38, as discussed above patent 739 disclose optical transmission system and differ from the claimed invention in that patent 739 does not disclose that each of at least one of the plurality of optical transmitters are configured to transmit only one signal wavelength. However, as shown by Taga et al, it well known to configured the plurality of transmitters to transmit only one signal wavelength. For example, in Fig. 1, Taga et al show transmitter (2a) transmitting only one signal wavelength such as (ch1); and transmitter (2b) transmitting only one signal wavelength such as (ch2). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the transmitter to transmit only one wavelength. The benefit of doing such is to reduce signal interference between channels of the same transmitter.

Regarding claim 40, as discussed above patent 739 disclose optical transmission system and differ from the claimed invention in that patent 739 does not disclose at least one amplifier between the transmitters and the receivers. However, providing optical amplifier in the transmission line is well known. Taga et al show such well known concept. In Fig. 1, Taga et al shows amplifier (5) is provided between the transmitter and receiver system. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide amplifier to the transmission system of patent 739. It is well known that signal level degrades as it travels on transmission lines, therefore one of ordinary skill in the art would have been motivated to provide amplifier in the transmission line in order to maintain or increase signal strength.

Regarding claim 41, patent 739 discloses optical transmission system (see claim 17 of patent 739) comprising:

- an optical transmitter configured to transmit a signal wavelength and at least one tuning wavelength;

- an optical receiver, each including an optical filter having a filter bandwidth including the at least one signal wavelength and a percentage of the tuning wavelength and an optical to electrical signal converter configured to receive the at least one signal wavelength from said filter;

- a tuning optical to electrical converter configured to receive a first portion of the tuning wavelength from said filter and,

- a filter controller configured to tune the filter bandwidth based on the first portion of the tuning wavelength power and a tuning wavelength set point power.

Patent 739 differs from the claimed invention in that patent 739 does not disclose the use of plurality of optical transmitters to transmit plurality of different wavelengths and plurality of optical receivers. However, providing plurality of optical transmitters and optical receivers is well known. Taga et al is cited to show such well known concept. In Fig. 1, Taga et al show plurality of transmitters (2a, 2b, 2c and 2d) for transmitting plurality of signal wavelengths (ch 1, ch2, ch3 and ch4) and plurality of receivers (9a, 9b, 9c and 9d) for receiving the transmitted signals. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmission system of patent 739 to include plurality of optical transmitters and optical receivers since it has been held that mere duplication of the essential

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working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8, 11 (7th Cir. 1977). One of ordinary skill in the art would have been motivated to do such in order to increase transmission bandwidth by transmitting plurality of wavelengths channels. Furthermore, in the preamble, applicant recites wavelength division multiplexed optical transmission system. As shown in Fig. 1 of Taga et al, plurality of channels (ch 1, ch2, ch3 and ch4) is multiplexed by wavelength-division multiplexer (3) to form wavelength division multiplexed optical transmission system.

Regarding claim 42, patent 739 discloses a method of transmitting and receiving information (see claim 18 of patent 739), comprising:

- transmitting the information via an optical signal wavelength;
- transmitting at least one tuning signal via at least one tuning wavelength;
- filtering the at least a portion of the information and the tuning signal with an optical filter (patent 739 discloses filtering the information and the tuning signal, which indicate that at least a portion of the signal is filtered);
- converting a portion of the tuning signal into an electrical tuning signal;
- tuning the optical filter in response to the electrical tuning signal; and
- converting the at least a portion of the information into an electrical information signal (patent 739 discloses converting the information into an electrical information signal, which indicate that at least a portion of the signal is converted into an electrical information signal).

Patent 739 differs from the claimed invention in that patent 739 does not disclose transmitting the information via a plurality of different optical signal wavelengths. However, transmitting plurality of different optical signal wavelengths is well known. Taga et al is cited to show such well known concept. In Fig. 1, Taga et al show plurality of transmitters (2a, 2b, 2c and 2d) for transmitting plurality of different wavelengths (ch 1, ch2, ch3 and ch4). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmission system of patent 739 to include plurality of optical transmitters for transmitting plurality of different wavelengths since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8, 11 (7th Cir. 1977). One of ordinary skill in the art would have been motivated to do such in order to increase transmission bandwidth by transmitting plurality of wavelengths channels.

Regarding claim 43, patent 739 discloses filtering the information is selected from a group consisting of reflecting the information with the optical filter and passing the information through the optical filter (see claim 19 of patent 739).

Regarding claim 44, patent 739 discloses filtering the tuning signal is selected from a group consisting of reflecting a portion of the tuning signal with the optical filter, and passing a portion of the tuning signal through the optical filter (see claim 20 of patent 739).

Regarding claim 45, patent 739 discloses tuning the filter includes tuning the filter to maintain a predetermined electrical tuning signal (see claim 25 of patent 739).

Regarding claim 46, patent 739 discloses that tuning the filter includes tuning the filter to maintain a first electrical tuning signal equal to a second electrical tuning signal (see claim 26 of patent 739).

Regarding claim 47, patent 739 discloses tuning the filter includes tuning the filter to maintain the electrical tuning signal within a predetermined range (see claim 27 of patent 739).

Regarding claim 48, as discussed above patent 739 disclose optical transmission system and differ from the claimed invention in that patent 739 does not disclose amplifying the plurality of different optical signal wavelengths. However, amplifying the plurality of different optical signal wavelengths is well known. Taga et al show such well known concept. In Fig. 1, Taga et al shows amplifier (5) is provided between the transmitter and receiver system for amplifying the plurality of different optical signal wavelengths (ch1, ch2, ch3 and ch4) transmitted by transmitters (2a, 2b, 2c and 2d). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to amplify the plurality of different optical signal wavelengths. It is well known that signal level degrades as it travels on transmission lines, therefore one of ordinary skill in the art would have been motivated to amplify the plurality of different optical signal wavelength in order to maintain or increase signal strength.

7. Claim 39 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,714,739

(hereinafter "patent 739") in view of Taga et al (US Patent No. 5,559,910) and further in view of Jiang et al (US Patent No. 6,122,413).

Regarding claim 39, the combination of patent 739 and Taga et al disclose plurality of optical transmitters transmitting a plurality of signal wavelengths and one tuning wavelength (see rejection of claim 1). The combination differs from the claimed invention in that the combination does not disclose that at least one of the plurality of optical transmitters is configured to transmit a plurality of signal wavelengths. However, it is well known that an optical transmitter can be designed such that it transmits a plurality of signal wavelengths. Jiang et al is cited to show such well known concept. In col. 2, lines 16-21 and col. 4, lines 42-45, Jiang et al teach multiple wavelengths transmitter which transmit multiple channels from a single laser. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmitter of the combination so that the transmitter transmits plurality of signal wavelengths as taught by Jiang et al. One of ordinary skill in the art would have been motivated to do this in order to increase transmission bandwidth of a transmitter unit.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is 571-272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DS
September 15, 2004

David Singh